AMENDMEND TO CLAIMS

Please amend claims 1, 10-12, 14, 21, 23 and 27-29 as following:

1. (*Currently amended*) A transmitter operating in a switching-mode, the transmitter comprising:

a signal decomposition unit decomposing a modulated digital signal into a first signal and a second signal, both being expressed in polar coordinates ~~mathematically~~;

an adaptive predistorter distorting the first and second signals respectively in accordance with one or more of distorting parameters;

a phase equalizer equalizing a time delay between the first and second signals in response to a measurement provided by a feedback loop operating on a sample of a RF signal from the transmitter; and

a power amplifier, controlled by the first signal and a phase-modulated signal coupled from a voltage controlled oscillator, producing the RF signal.

2. (*Original*) The transmitter of claim 1, wherein the modulated digital signal is provided from a baseband processor, the first signal is an amplitude signal, and the second signal is a phase signal, and the phase-modulated signal is produced from the second signal.

3. (*Original*) The transmitter of claim 2, wherein the feedback loop includes a down-converter, a demodulation unit and a measurement unit, and provides feedback signals to at least the phase equalizer.

4. (*Original*) The transmitter of claim 3, wherein the down-converter converts the sample to a lower frequency to be demodulated in the demodulation unit, and the demodulated sample is measured in the measurement unit for producing the feedback signals.

5. (*Original*) The transmitter of claim 1, wherein the first signal is provided to indirectly control the power amplifier.

6. (*Original*) The transmitter of claim 5, wherein the first signal activates a control unit to generate a bias control signal and a voltage signal in response to the first signal.

7. (*Original*) The transmitter of claim 5, further comprising a first modulation path and a second modulation path, both operating on the second signal.

8. (*Original*) The transmitter of claim 7, wherein the first modulation path provides a first input signal to the voltage controlled oscillator in response to the second signal processed in a phase gain unit.

9. (*Original*) The transmitter of claim 8, wherein the second signal, after processed in the phase gain unit, is converted to an analog signal.

10. (*Currently amended*) The transmitter of claim ~~7~~8, wherein the second modulation path provides a second input signal to the voltage controlled oscillator in response to the second signal processed in a phase offset unit.

11. (*Currently amended*) The transmitter of claim 10, wherein the second modulation path is formed by a phase-locked loop (PLL) including an adder that couples both the first input signal and second input signals to modulate the voltage controlled oscillator.

12. (*Currently amended*) A method for controlling a transmitter to operate in a switching-mode, the method comprising:

decomposing a modulated digital signal into a first signal and a second signal, both being expressed in polar coordinates ~~mathematically~~;

distorting the first and second signals respectively in accordance with one or more of distorting parameters;

equalizing a time delay between the first and second signals in response to a measurement provided by a feedback loop operating on a sample of a RF signal from the transmitter; and

producing the RF signal in a power amplifier controlled by the first signal and a control signal coupled from a voltage controlled oscillator.

13. (*Original*) The method of claim 12, wherein the modulated digital signal is provided from a baseband processor, the first signal is an amplitude signal, and the second signal is a phase signal, and the control signal is produced from the second signal.

14. (*Currently amended*) The method of claim 12, wherein the feedback loop includes a down-converter, a demodulation unit and a measurement unit, and provides feedback signals to at least ~~the~~ a phase equalizer.

15. (*Original*) The method of claim 14, wherein the down-converter converts the sample to a lower frequency to be demodulated in the demodulation unit, and the demodulated sample is measured in the measurement unit for producing the feedback signals.

16. (*Original*) The method of claim 12, wherein the first signal is provided to indirectly control the power amplifier.

17. (*Original*) The method of claim 16, wherein the first signal activates a control unit to generate a bias control signal and a voltage signal in response to the first signal.

18. (*Currently amended*) The method of claim 16, ~~further~~ wherein the transmitter comprises~~ing~~ a first modulation path and a second modulation path, both operating on the second signal.

19. (*Original*) The method of claim 18, wherein the first modulation path provides a first input signal to the voltage controlled oscillator in response to the second signal processed in a phase gain unit.

20. (*Original*) The method of claim 19, wherein the second signal, after processed in the phase gain unit, is converted to an analog signal.

21. (*Currently amended*) The method of claim ~~18~~19, wherein the second modulation path provides a second input signal to the voltage controlled oscillator in response to the second signal processed in a phase offset unit.

22. (*Original*) The method of claim 21, wherein the second modulation path is formed by a phase-locked loop (PLL) including an adder that couples both the first and second input signals to modulate the voltage controlled oscillator.

23. (*Currently amended*) A method for controlling a transmitter to operate in a switching-mode, the method comprising:

compensating a frequency drift and other non-linear effects of a modulated voltage-controlled-oscillator (VCO) and a power amplifier by predistorting a baseband amplitude signal and a phase signal in accordance with one or more distorting parameters, wherein the baseband amplitude signal and the phase signal have been decomposed in terms of polar coordinates;

providing a phase-locked loop (PLL) with an adaptive phase gain and a phase offset control in response to the phase signal; and

modulating the power amplifier with the baseband amplitude signal and an output coupled from the modulated voltage controlled oscillator (VCO).

24. (*Original*) The method of claim 23, further comprising:

demodulating samples of an output of the power amplifier and the modulated voltage controlled oscillator to regenerate a first signal, a second signal and a third signal in a digital format;

comparing the demodulated first and second signals to the baseband amplitude signal and phase signals with reference to the third signal, respectively; and

producing feedback control signals to update the one or more distorting parameters, and other related parameters.

25. (*Original*) The method of claim 24, still further comprising equalizing a delay time between the baseband amplitude and phase signals.

26. (*Original*) The method of claim 25, wherein the delay time is provided by one of the feedback control signals.

27. (*Currently amended*) The method of claim 23, wherein the phase-locked loop (PLL) comprises:

the voltage-controlled oscillator (VCO) with a control input and a phase-modulated output;

a phase detector to compare two phase-modulated signals and produce an output representing the phase difference of the two phase-modulated signals;

a loop filter coupled to the output of the phase detector and to the input of the VCO;

a feedback loop including a feedback frequency divider which is coupled to the output of the VCO and to an input of the phase detector;

a reference frequency signal coupled to another input of the phase detector; and

a ~~controller~~ modulator receiving a phase-modulated baseband signal and a carrier frequency signal to produce a digital bit stream used to control a divisor of the feedback frequency divider.

28. (*Currently amended*) The method of claim 23, wherein a controller ~~in the phase-locked loop (PLL)~~ receives a phase-modulated baseband signal and a carrier frequency

signal to produce a digital bit stream used to control a reference frequency coupled to an input of ~~the~~ a phase detector.

29. (*Currently amended*) The method of claim 23, wherein the VCO operates by:

~~adding~~ coupling the phase-modulated baseband signal to an input node of the VCO which is used by the phase-locked loop;

using an adaptive phase gain to scale the phase-modulated baseband signal ~~which is directly~~ before being coupled ~~added~~ to the input node of the VCO of the phase-locked loop;

using an adaptive phase offset to change the phase-modulated baseband signal which is applied to the input of ~~the~~ a controller of a phase locked loop; and

using adaptive digital predistortion to generate the adaptive phase gain and phase offset signals.